

CURRENT COMMENTS

National Science Foundation Stimulates Sociometric, Science Policy Studies Through Innovative Contract With ISI

Number 17, April 24, 1978

By now it is not particularly newsworthy when a government agency uses the *Science Citation Index*[®] data base on magnetic tape to provide computer-assisted literature search services. However, it is news when a US government agency makes the data base available to stimulate science policy and other sociometric studies.

Under a recent agreement with ISI[®] the National Science Foundation is making the *SCI*[®] data base available to its staff, contractors, and grantees for use in such bibliometrically based studies. NSF hopes this program will encourage researchers to carry out more studies designed to gain insight into scientific communication and the history and sociology of science. Previous studies have shown that bibliometric data and citation analyses can provide indicators of science activity, productivity, and impact.

The main feature of the agreement is that persons authorized by NSF can use the data base without paying an access fee. Normally, this

fee is \$5,000 for each year of data used and must be paid in addition to charges for special programming and computer time. Now, only the latter charges must be paid by the researcher.

Scholars have used bibliometric data to study science activities for over half a century. But the literature has become so large that simple studies as well as large-scale data analyses are beyond the financial resources of most researchers. The NSF contract puts these studies once again within the reach of many by making accessible the *SCI* file of machine-readable bibliographic descriptions of over 5 million source articles published from 1961 through 1977. Also included are the nearly 50 million reference citations which these source articles contain.

The file enables you to perform an infinite variety of analyses. Chronological comparisons, ranked lists, frequency distributions, growth and decay studies, impact measurements, etc., are just a few that come to mind. More speci-

finally, you could determine how many articles were published in specified languages in one or more categories of journals. Word or phrase frequency studies are possible, as is quantification of the growth of multi-authored papers in a specific field.

A large variety of citation studies is also possible. Literally hundreds of them have already been done. For example, one study compared citation frequencies of groups which had received funding with those of groups which had not in order to test the effectiveness of an NSF program.¹ In another study, citation analyses of NSF grantees and of those who did not receive grants helped to determine the efficacy of the NSF's peer review system.² Citation patterns were also studied as part of a project to identify the role of the review literature in science.³

NSF has also supported research on co-citation frequency (how often two documents are cited together). "Clusters" of co-cited papers identify new and emerging scientific specialties quite rapidly.⁴ For this reason, science policy makers can use "cluster maps" to obtain indications of science activity—where it exists and where it doesn't. In this way funds may be allocated to stimulate needed research or sustain it in breakthrough areas. Historians and sociologists of science can use these maps to trace the growth and decline of specific fields or specialties.

This unique agreement could be especially useful to information scientists. With the very recent inception of NSF's new Division of Information Science & Technology, it is likely that more information scientists will be funded for basic research efforts.^{5,6} Bibliometric data are essential for testing basic "laws" in information science.

While sociologists and information scientists in the US may be the most obvious users of this data base, they are by no means the only ones who could use the bibliometric data in the *SCI* file. *Current Contents*[®] readers include editors and editorial board members of thousands of journals. They should use this unique opportunity to apply for NSF research grants to pinpoint important new trends in the disciplines their journals serve. They could also study citation data to help evaluate journal performance, to learn which other journals cite theirs most often.

Scientists outside the United States who are interested in this program should contact the appropriate agencies in their country. We have negotiated similar agreements in other countries but nothing on such an extensive scale as the NSF contract.

If you are in the US and you think that the *SCI* data base would be helpful in a study you are planning, you should include the computer-time costs as line items in your budget proposal to NSF. You can determine the cost and whether

special programming is needed by contacting Dr. Morton Malin, Vice President, Professional Relations and Contract Research, at

800-523-1850. You can also write to him at 325 Chestnut St., Philadelphia, PA. 19106, USA.

REFERENCES

1. **Wilson M K.** The top 20 and the rest: big chemistry and little funding. *Annu. Rev. Phys. Chem.* 26:1-16, 1975.
2. **Cole S, Rubin L & Cole J R.** Peer review and the support of science. *Sci. Amer.* 237:34-41, October 1977.
3. **Mazella A.** Bibliometric study of the review literature. Final Report to the National Science Foundation on Grant No. DS1-76-0534. Philadelphia: Institute for Scientific Information, 1977. 94 p.
4. **Garfield E.** ISI is studying the structure of science through co-citation analysis. *Current Contents* (7):5-6, 13 February 1974. (Reprinted in: *Essays of an information scientist*. Philadelphia: ISI Press, 1977. Vol. 2, p. 26-31.)
5., Information science and technology have come of age—organizational names should show it. *Current Contents* (12):5-8, 20 March 1978.
6. **Lepkowski W.** NSF revamps science information office. *Chem. Eng. News* 56(11):18-9, 13 March 1978.